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STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

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September 29, 1999

Mr. Richard French
United States Department of Energy
P.O. Box 550; MSIN: A6-54
Richland, Washington 99352

Mr. Anthony Umek
Fluor Daniel Hanford, Inc.
P.O. Box 1000; MSIN: S7-40
Richland, Washington, 99352

Ms. Mary Delozier
Lockheed Martin Hanford Corporation
P.O. Box 1500; MSIN: R2-50
Richland, Washington 99352

Dear Messrs. French, Umek, and Ms. Delozier:

Re: Washington State Department of Ecology Concerns/Request for Information Associated with Double Shell Tank SY-101

The Washington State Department of Ecology (Ecology) has several concerns associated with plans formulated by the United States Department of Energy (USDOE) to transfer waste out of Tank SY-101, and the subsequent dilution of the waste remaining in SY-101 with fresh water. Ecology requests a prompt response to these concerns, which are as follows:

1. Establishing safe and stable conditions for the waste stored in Tank SY-101 while minimizing the impact to the environment.

2. Potential for creating gas generating and crust producing problems within the transfer system and tanks receiving waste from Tank SY-101.

3. Minimizing the production of large quantities of waste that would occur when several hundred thousand gallons of dilution water are used.

4. Impacts to tank storage capacity and USDOE current waste volume projections.

1. **Establishing safe and stable conditions for the waste stored in Tank SY-101 while minimizing the impact to the environment.**

   Ecology fully recognizes the need to resolve the problems of both gas retention and crust growth in Tank SY-101. The current plans presented to the Tank Advisory Panel (TAP) involve a sequence of transfers, and subsequent dilution of the waste remaining in SY-101 with fresh water. Ecology understands the need to resolve short-term hazards that require removal of about 100K gallons of waste from Tank SY-101. After listening to the recommendations of the TAP, Ecology agrees that safety issues associated with crust formation and gas retention by the crust are currently a higher priority than treating the waste below the crust. However, Ecology believes that additional alternatives exist for achieving and then maintaining the waste in Tank SY-101 in a safe condition (reduction of both crust growth and uncontrolled release of flammable gases). It is Ecology's position that these alternatives should receive further consideration before proceeding with additional transfers or waste dilution activities.

   Ecology suggests that further consideration be given to eliminating, or reducing the crust, by spraying water used for back-dilution on top of the crust. Ecology suggests that a more stable configuration for the waste in SY-101 can be realized if liquid waste from below the crust can be distributed over the top of the crust without causing an overloading the HEPA filters. This second alternative is Ecology's preferred solution for maintaining safe storage of the waste in Tank SY-101 without simply moving the problem to other tanks and unnecessarily creating new tank waste.

2. **Potential for creating gas generating and crust producing problems within the transfer system and tanks receiving waste from Tank SY-101.**

   It is Ecology's understanding that the USDOE's proposed plans include transferring waste from Tank SY-101 to Tank SY-102, and then pumping it across the site to the 200 East Area. The waste from SY-102 would then be mixed with other waste in the 200 East Area, concentrated through the 242-A evaporator, and placed into the AN Tank Farm for storage. If the waste from Tank SY-101 must be diluted in order to maintain safe storage, how can safe storage be maintained if the waste is then re-concentrated by the evaporator? In addition, it is obvious from the current problems with the waste in SY-101, that the chemistry of waste interactions is not well understood. Ecology does not and will not support the use of specific gravity as the sole designation of safe storage of waste. Until the chemistry of the waste is understood, problems such as those associated with SY-101 will continue.

The regulations do not allow for the transfer of waste with reactive characteristics such that a reactive condition is created in the receiving tank. Ecology needs to be provided a technically defensible proposal that satisfies these issues to guarantee that future problems similar to those currently found in SY-101 will be prevented.

Presentations before the TAP on September 13, 1999, revealed that two (2) feet or more of solids might accumulate in Tank SY-102 after the first transfer. Explain how this will not cause concern for additional heat loading, or gas retention, in Tank SY-102.

3. **Minimizing the production of large quantities of waste that would occur when several hundred thousand gallons of dilution water are used.**

State and federal regulations identify the need to minimize the volume of waste produced. Therefore, Ecology requires that every effort be made to ensure that any solution to the safety threats, presented by waste stored in Tank SY-101, clearly focus on the intent to reduce the amount of new waste created. The current plan includes up to four 100K gallon transfers into Tank SY-102 with a one-to-one ratio of dilution water added, which equals up to 800K gallons. In addition, as many as four 100K gallon additions of clean water to Tank SY-101 are planned, which creates another 400K gallons of new waste. This amounts to the possible creation of a net total of 800K gallons of new tank waste. The plans for solving the safety hazards associated with Tank SY-101 do not address the concern for creating new tank waste. Ecology's main concern is that insufficient emphasis has been placed on finding alternatives that would minimize the generation of new waste. Any proposal to Ecology must include all possible efforts to minimize the creation of new waste. This must be factored into the planning process with a clear explanation of how this has been evaluated and addressed.

4. **Impacts on tank storage capacity and USDOE current waste volume projections.**

What are the impacts on waste volume space availability in double-shell tanks by the addition to the existing system of as much as 800K more gallons? The main justification for the elimination of Milestone M-31 (the building of new multi-function storage tanks at Hanford) was the identification that the mixer pump installed in Tank SY-101 mitigated the safety hazards associated with the waste in the tank. Therefore, it was no longer necessary to build additional storage capacity which would be required if waste in Tank SY-101 was removed and diluted. Now, several years later, the only solution offered by the USDOE to resolve the safety hazards associated with Tank SY-101 is removal and dilution of the waste.

If this is the case, the earlier decision to cancel construction of new storage tanks at Hanford is no longer justified. Ecology is concerned the decision to dilute the waste currently stored in Tank SY-101 confirms the need for additional tank space. Explain the impacts to waste volume projection and the possible need for new tanks.

Although Ecology supports the current plan for the initial transfer of waste out of Tank SY-101, planned for late October 1999, there are serious concerns regarding subsequent transfers as the means to mitigate SY-101 crust growth and gas retention that must be seriously considered. Ecology, however, cannot support the proposed future plans for continued remediation of the safety hazards associated with waste stored in SY-101. It is clear that all options have not been explored. Please address these concerns and respond in writing by October 22, 1999. If you wish to discuss the contents of this communication to ensure our concerns are adequately understood, please contact Casey Ruud (736-3022).

Sincerely,

Tony Valero
Tank Storage Project Manager

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cc: Administrative Record